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ABSTRACT

The relationship between geographic mobility and pupil achievement in reading was investigated for a sample of 2,072 sixth-grade children. A three-way analysis of variance design provided for the study of three levels of mobility when boys and girls were grouped into three levels of ability. Two additional covariates were employed to cause the groups to be comparable in terms of occupational status and educational attainment of the head of the household. The only statistically significant interaction between mobility and the other variables revealed that the highly mobile pupils showed significantly less achievement in word knowledge than did their less mobile classmates. There was no significant difference between mobile and nonmobile children for total reading or reading comprehension mean scores. Tables and references are included. (CM)

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READING ACHIEVEMENT AND GEOGRAPHIC MOBILITY

by Mary A. Gilchrist

According to the 1955 population survey over 31,000,000 people in the United States moved during that year. (15:40) This was nearly one-fifth of the 158,600,000 persons living in the nation at that time. The 1960 Census revealed that 47.3 per cent of the population lived in a different house than the one in which they had lived ten years earlier. (14:1) Between March, 1962, and March, 1963, 19.4 per cent of the population had moved to different houses and during the following year that figure increased to 19.6 per cent. (16:32) Included within this population of mobile people were approximately 3,660,000 adults between the ages of 25 and 44 who had moved from one

RE002 727

county to another during the one-year period.(18:32) The people within this group represent the age range within which most parents of elementary school children would be found.

One result of the geographical mobility of the American people is reflected in the pupil roster of almost every classroom in the country. Parents change residence; children change schools. It seems unlikely that all this moving about is without implications for the education of children.

It has long been a popular assumption among school people that achievement is affected when children change schools. This belief is especially strong about children who change schools frequently.

A review of the literature reveals that the findings from research into the problem of geographic mobility and reading have been neither conclusive nor consistent. Whether they were referred to as transients, migrants, newcomers or mobile children, favorable relationships between mobility and reading achievement have been found over the years by such investigators as Sackett(11), Evans (5), Ames (1), Gilliland (6).

Over a comparable period of time others have found negative relationships. Beach and Beach (2) reported the reading retardation of transient children as did Morris, et al.(10). Weatherman (17) found the mobile boys had lower achievement scores in reading than did the other children in his study. A slightly negative effective was found for middle class children in Miller's investigation.(9).

The absence of either a significantly positive or negative relationship between reading and moving has been reported by such investigators as Huus (8), Bollenbacher (3), and Snipes (12).

I. THE PROBLEM

Statement of the Problem. It was the purpose of this research to study the relationship between geographical mobility and pupil achievement in reading. The problem was explored not only for the total group, but was examined considering possible differential effects, depending upon pupil sex or ability, when the effects of education and occupational status of the head of the household had been held constant. Geographical mobility meant the number of times a child changed schools.

The personal characteristics and achievement variables investigated in relation to mobility were:

1. Total reading achievement
    a. Word knowledge
    b. Comprehension
2. Parental occupation
3. Parental education
4. Intelligent quotient
5. Sex

The Metropolitan Achievement Tests, Form BM, were used to secure reading scores. The intelligence quotient was derived from scores on the Otis Quick Scoring Mental Ability Tests, Beta Tests, Form EM. The Index of Social Position was utilized to codify parental occupation and education.(7)

II. HYPOTHESES OF THE STUDY

It was the function of this study to test the following null hypotheses.

1. Mean achievement scores will not differ for mobile and non-mobile pupils.
2. The difference in achievement for mobile and non-mobile pupils will be equal for both boys and girls (i.e., the effects of mobility /if any/ will be the same for both sexes).
3. The effects of mobility (if any) are constant regardless of pupil ability. In other words, the effects of mobility (if any) will be the same for all ability levels.
4. The mobility-by-ability interaction (if any) will be the same for both sexes. For example, if the effects of mobility are more severe for pupils of low ability, this achievement "gap" will be equally great for low ability girls as it is for low ability boys.

The null hypotheses were tested by using reading achievement scores as dependent variables. The groups were equated,

using occupational status and educational attainment of the head of the household as matching variables.

III. THE DESIGN

From a sample of 2,386 children representing approximately 90 per cent of the sixth grade enrollment of one school district in a midwestern state, a random sample of 2,072 cases was drawn. This total provided proportionate numbers of subjects in each of the cells for the analysis of covariance design. A three-way design provided for the study of three levels of mobility when boys and girls were grouped into three levels of ability. To exert additional control, two covariates were employed to cause the groups to be comparable in terms of occupational status and educational attainment of the head of the household. The data were analyzed with the analysis of covariance design on the CDC 5400 computer with the computer program BMD 05V. (5)

The significance of correlation coefficients indicated that the covariates were related to reading in a significant and positive way. This strengthened the justification for the use of occupation and education of the head of the household as covariates in the study.

IV. THE FINDINGS

The first null hypothesis stated that mean achievement scores in reading would not differ for mobile and non-mobile pupils in Grade Six when compared on the subtests, word knowledge and reading comprehension, and total reading scores of the Metropolitan Achievement Tests, Form EM. Criterion scores were adjusted, using analysis of covariance, for differences in the occupational and education level of the head of the household.

Table I presents the F-ratios and error mean squares for each of the analyses of covariance of the reading subscores and total scores.

Analysis of covariance of the total reading and subtest scores yielded only one significant difference in the testing of the first null hypothesis. The null hypothesis of no difference between mobile and non-mobile children could not be rejected when mean achievement scores in total reading and reading comprehension were tested. Mean achievement scores for word knowledge, however, differed significantly at the .05 level of confidence between mobile and non-mobile pupils.

TABLE I

F-RATIOS: READING TOTAL TEST AND SUBTEST SCORES, FOR MOBILITY x ABILITY x SEX, ANALYSIS OF COVARIANCE DESIGN

Source of Variation	df	Total Reading	Word Knowledge	Comprehension
Mobility	2	2.16	3.64*	0.77
Ability	2	458.54***	386.62***	368.72***
Sex	1	1.07	4.10*	0.004
Mobility x Ability	4	0.60	0.37	1.02
Mobility x Sex	2	0.83	1.10	0.45
Ability x Sex	2	1.67	2.73	0.57
Mobility x Ability x Sex	4	0.84	0.73	0.89
Error MS	2052	1.56	1.89	1.99

*$p < .05$

*** $p < .001$

$F_{.05}\ (2,2052) = 3.07$, $F_{.05}\ (1,2052) = 3.92$ $F_{.05}\ (1,2052) = 2.37$,

$F_{.001}\ (2,2052) = 6.91$

The adjusted mean of the group which moved three or more times was 7.28 as compared to the adjusted means of 7.48 and 7.54 for the non-mobile group and the group which had moved one or two times, respectively, for the subtest, word knowledge. Testing of the differences between means with the Newman-Keuls formula revealed that the highly mobile pupils achieved significantly lower in word knowledge than did either group of their less mobile classmates (13:110 and 114). Mobility did not interact with either ability or sex differences in this hypothesis. Table II presents the adjusted means.

TABLE II

ADJUSTED MEANS FOR READING ACHIEVEMENT FOR MOBILITY DESIGN

	Non-Mover	1,2 Moves	3+ Moves
Total Reading	7.31	7.34	7.16
Word Knowledge	7.48	7.54	7.28*
Comprehension	7.18	7.20	7.09

*$p < .05$

The second null hypothesis which stated that the difference in achievement in reading for mobile and non-mobile pupils will be equal for boys and girls was accepted when total reading achievement scores and subscores were used as the

dependent variables. The largest F-ratio in this analysis, 1.10, occurred with the subscore, word knowledge, but was well below the level required for rejection of the hypothesis (3.07). Table III presents the adjusted means for the mobility by sex design.

TABLE III

ADJUSTED MEANS FOR READING ACHIEVEMENT FOR MOBILITY x SEX DESIGN

Test	Group	0	1,2	3+
Total Reading	Male	7.32	7.33	7.31
	Female	7.29	7.36	7.01
Word Knowledge	Male	7.56	7.56	7.47
	Female	7.39	7.52	7.08
Compre-hension	Male	7.15	7.15	7.19
	Female	7.23	7.25	6.99

The pattern of means by ability group was consistent; thus the third null hypothesis was not rejected. The effects of mobility were found to be constant regardless of the ability group. Table IV shows the adjusted means for the mobility by ability design.

The failure of the F-ratios to reach the critical 2.37

for either total or subscores resulted in the acceptance of the fourth null hypothesis. It had been hypothesized that any significant mobility by ability interaction would be the same for both boys and girls. The largest calculated value of F was 0.89. Table V presents the adjusted means.

TABLE IV

ADJUSTED MEANS FOR READING ACHIEVEMENT FOR MOBILITY x ABILITY DESIGN

Test	Group	0	1,2	3+
Total Reading	Low	5.40	5.36	5.33
	Middle	7.20	7.27	7.13
	High	9.10	9.10	8.64
Word Knowledge	Low	5.55	5.57	6.27
	Middle	7.41	7.50	7.28
	High	9.20	9.18	8.85
Compre-hension	Low	5.26	5.19	5.39
	Middle	7.05	7.09	7.03
	High	9.03	9.05	8.57

TABLE V

ADJUSTED MEANS FOR READING ACHIEVEMENT FOR
MOBILITY x ABILITY x SEX DESIGN

Test	Mobility	Boys			Girls		
		L	M	H	L	M	H
Total Reading	0	5.45	7.24	9.03	5.34	7.17	9.18
	1,2	5.31	7.27	9.11	5.39	7.28	9.09
	3	5.55	7.34	8.57	5.11	6.92	8.83
Word Knowledge	0	5.64	7.55	9.13	5.45	7.27	9.28
	1,2	5.57	7.54	9.19	5.56	7.46	9.18
	3	5.63	7.52	8.76	4.91	7.04	8.96
Comprehension	0	5.29	6.98	8.96	5.25	7.12	9.09
	1,2	5.10	7.16	9.07	5.29	7.14	9.04
	3	5.50	7.22	8.42	5.30	6.85	8.75

N= 2072

V. SUMMARY

Each of the four null hypotheses was tested three times. Each time a different criterion score was used as the dependent variable. In only one instance was it possible to reject the null hypothesis.

When word knowledge was the dependent variable, a significantly smaller adjusted mean was found for children who had changed schools three or more times. This finding, however, should be viewed with caution in light of the number of times the hypothesis was accepted in other tests and, therefore, no practical interpretation of difference appeared justified. In addition, the pattern of differences was irregular, i.e., the adjusted mean for one and two moves was greater than the adjusted mean for non-movers which, in turn, was greater than the adjusted mean for those who had changed schools three or more times. For these reasons little confidence can be placed in the finding.

This investigation indicates that when the influences of ability, sex, and socio-economic background are controlled statistically, reading achievement is not related significantly to mobility. Had these influences not been controlled, correlation coefficients indicate that significant relationships between mobility and achievement would have occurred. It becomes apparent that information about the number of times a

child has changed schools should be supplemented with knowledge of his ability and socio-economic background before conclusions are drawn about the performance of a mobile child.

VI. CONCLUSIONS

The evidence provided by the statistical analysis of the data provide the basis for the following conclusions.

1. The number of times children changed schools did not appear to be related to academic achievement in the area of reading comprehension.
2. The achievement area of word knowledge may be related to the number of times children change schools in a negative way. Three or more changes of school may have a retarding effect upon word knowledge.
3. There appeared to be no relationships between reading achievement and mobility when pupils were grouped by level of ability.
4. When grouped by sex, no relationship of significance appeared between reading achievement and mobility.
5. Mobility did not appear to be more closely related to academic achievement in reading for one sex of a particular ability level than for the other sex, nor

was it more closely related for one sex at any other ability level than for the other.

6. The occupational and educational status of the head of the household appeared to be related significantly to academic achievement in reading.

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